

## **REMARKS**

Upon entry of this amendment, claims 1-3, 6-14 and 16-21 are all the claims pending in the application. Claim 5 has been canceled by this amendment.

### **I. Claim Rejections**

A. Claims 1-3, 6 and 14-16 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Stava (US 6,501,049); and claim 5 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Stava (US 6,501,049) in view of Oku (US 3,36,473).

By this amendment, Applicants note that claim 5 has been canceled, and that the features recited in claim 5 have been incorporated into claim 1. Thus, claim 1 now recites that a length of time elapsed from occurrence of the short circuit is obtained, and the gradient of the current waveform in a short-circuit condition is controlled according to the length of time elapsed from occurrence of the short circuit, wherein the longer the time elapsed from occurrence of the short circuit, the greater the gradient of the current waveform applied in the short-circuit condition.

Regarding the above-noted features, Applicants note that in the Office Action, the Examiner has recognized that Stava does not teach that the longer the time elapsed from occurrence of the short circuit, the greater the gradient of the current waveform applied in the short-circuit condition (see Office Action at page 6). The Examiner, however, has applied the Oku reference and has taken the position that Oku cures this deficiency of Stava.

In particular, Applicants note that the Examiner has stated on page 7 of the Office Action that “Oku teaches varying the gradient of the current for arc stabilization during the short circuit period”. Applicants respectfully disagree with this position taken by the Examiner for the following reasons.

In particular, Applicants note that while Oku teaches varying the gradient of the current for arc stabilization, it is respectfully submitted that Oku does not teach or in any way suggest varying the gradient of the current for arc stabilization during the short circuit period. As such, contrary to the position taken by the Examiner in the Office Action, Applicants respectfully submit that Oku does not teach “varying the gradient of the current for arc stabilization during the short circuit period”.

In this regard, Applicants note that Oku is completely silent regarding the control of welding current or voltage during the short circuit-condition. For example, Applicants note that while Figs. 2 and 8 of Oku depict welding voltage and/or welding current, that these drawings do not illustrate welding voltage and/or current during the short circuit period, because the welding voltage during the short circuit should be a lower value such as zero to five volts.

In view of the foregoing, Applicants note that because Oku does not teach varying the gradient of the current for arc stabilization during the short circuit period, it is respectfully submitted that Oku also does not teach or suggest the above-noted feature recited in amended claim 1 which indicates that the longer the time elapsed from occurrence of the short circuit, the greater the gradient of the current waveform applied in the short-circuit condition.

Accordingly, Applicants respectfully submit that amended claim 1 is patentable over the combination of Stava and Oku, an indication of which is kindly requested.

Regarding claims 2, 3, 6 and 14-16, Applicants note that these claims depend from claim 1 and are therefore considered patentable at least by virtue of their dependency.

B. Claims 7-10, 12 and 13 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Kawai (JP 01-266966); and claim 11 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai (JP 01-266966) in view of Oku (US 3,36,473).

Regarding claim 7, Applicants note that this claim recites the feature of a secondary control section for sharply decreasing welding current **on detecting a moment at which a tip of a wire has a neck just before recovery from a short-circuit**. Applicants respectfully submit that Kawai does not disclose or suggest at least this feature of claim 7.

With respect to the above-noted feature, Applicants note that in the Office Action, the Examiner has indicated that “Drawing 8 of Kawai shows the current sharply decreasing between t2 and t3 and this is also shown in Drawing 6 during T3 (see Office Action at page 3). Initially, regarding this comment by the Examiner, Applicants note that it is believed that the Examiner intended to refer to Drawings 5 and 9 of Kawai. In this regard, Applicants note that Drawing 6 of Kawai is a circuit diagram and does not include a time period T3, and that Drawing 8 of Kawai does not include time periods t2 and t3.

Thus, with respect to Drawings 5 and 9 of Kawai, while the current is shown as decreasing between time t2 and t3 in Drawing 9, and during time t3 in Drawing 5, Applicants respectfully submit that the decrease in current does not occur **on detecting a moment at which a tip of a wire has a neck just before recovery from a short-circuit**, as recited in claim 7. In this regard, Applicants note that the Examiner has not addressed this aspect of claim 7 in the Office Action.

In view of the foregoing, Applicants respectfully submit that Kawai does not disclose, suggest or otherwise render obvious the above-noted feature recited in claim 7 of a secondary control section for sharply decreasing welding current **on detecting a moment at which a tip of**

**a wire has a neck just before recovery from a short-circuit.** Accordingly, Applicants submit that claim 7 is patentable over Kawai, an indication of which is kindly requested.

Regarding claims 8-10, 12 and 13, Applicants note that these claims depend from claim 7 and are therefore considered patentable at least by virtue of their dependency.

Regarding claim 11, Applicants note that the Examiner has recognized that Kawai does not teach or suggest the feature recited therein which indicates that the setting section performs output control so as to increase a steepness of the gradient of the current waveform in the short-circuit condition as the length of time elapsed from occurrence of the short-circuit increases. The Examiner, however, has applied the Oku reference and has taken the position that Oku cures this deficiency of Kawai.

In particular, similar to the discussion above with respect to claim 5, Applicants note that the Examiner has stated on page 7 of the Office Action that “Oku teaches varying the gradient of the current for arc stabilization during the short circuit period”. Applicants respectfully disagree with this position taken by the Examiner for the same reasons as discussed above with respect to claim 5.

In particular, Applicants note that while Oku teaches varying the gradient of the current for arc stabilization, that Oku does not teach or in any way suggest varying the gradient of the current for arc stabilization during the short circuit period.

Accordingly, Applicants respectfully submit that the combination of Kawai and Oku does not teach or suggest the above-noted feature recited in claim 11 which indicates that the setting section performs output control so as to increase a steepness of the gradient of the current waveform in the short-circuit condition as the length of time elapsed from occurrence of the

short-circuit increases. As such, Applicants respectfully submit that claim 11 is patentable over the cited prior art, an indication of which is kindly requested.

C. Claims 17-21 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawai (JP 01-266966) in view of Stava (US 5,001,326).

Claims 17-21 depend from claim 7. Applicants submit that Stava (US 5,001,326) fails to cure the deficiencies of Kawai, as discussed above, with respect to claim 7. Accordingly, Applicants submit that claims 17-21 are patentable at least by virtue of their dependency.

## **II. Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may best be resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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